FIG.1

# FIG.2

FIG.3-1

FIG.3

TO FIG.
3-3

FROM FIG.3-1

110

116

110   116

110

112

112

112

108

108

104

*FIG.3-2*

*FIG.3-3*

**FROM FIG.3-1**

**Camera View Control**
Brightness — *130*
— *120*

Contrast — *132*
— *134*

Refresh Frequency: [30] Hz — *136*

**Inflating Control**
Maximum Pressure: [4] kPa — *122*

Inflating Speed: [0.5] — *138*

Times of Measurement *144* [1] x — *140*

*142* [Start]  [Pause]  [Stop] — *146*

**Analysis Control**
Sensitivity beginning: [3] — *148*
— *124*

Sensitivity end: [3] — *150*

*152* ☐ Manual Check — *102*

**FROM FIG.3-2**

**Calculation Control**
Shape: [quadratic ▽] — *158*
— *160* — *126*

Edge Length: [1.25] mm — *162*

Thickness: [2] μm — *164*

Poisson: [0.275]

**Files**
[ Chose Output File ]
— *128*

Name: out.dat
[ Chose Location of Maple ]

**Manual Check**
[Finish] — *156*

**Results**
[Display] — *166*

*FIG.4*

SYSTEM AND METHOD FOR AUTOMATED
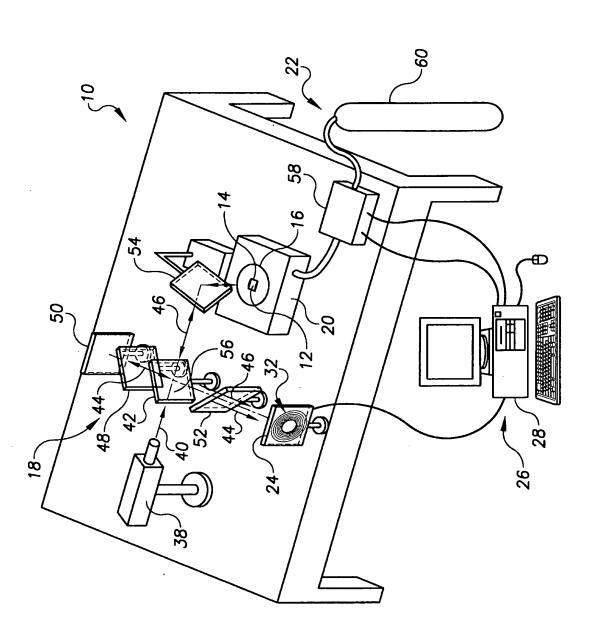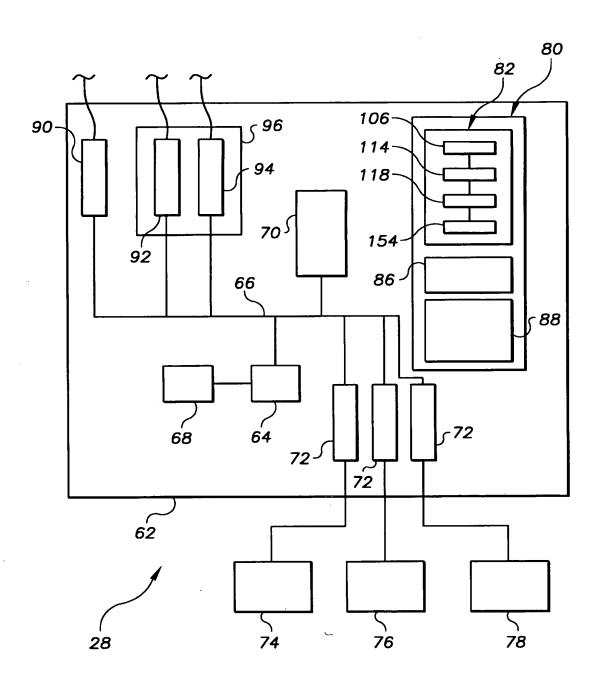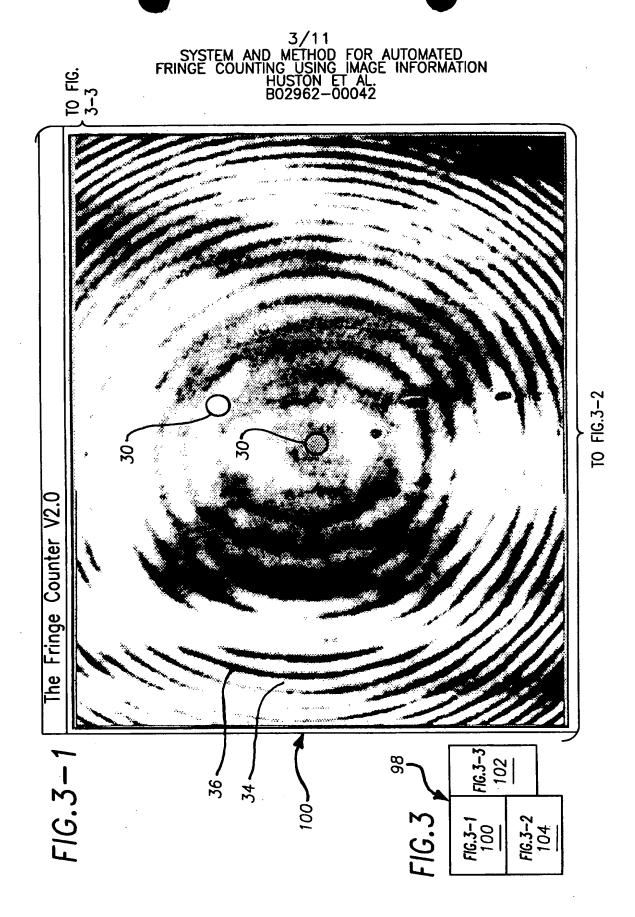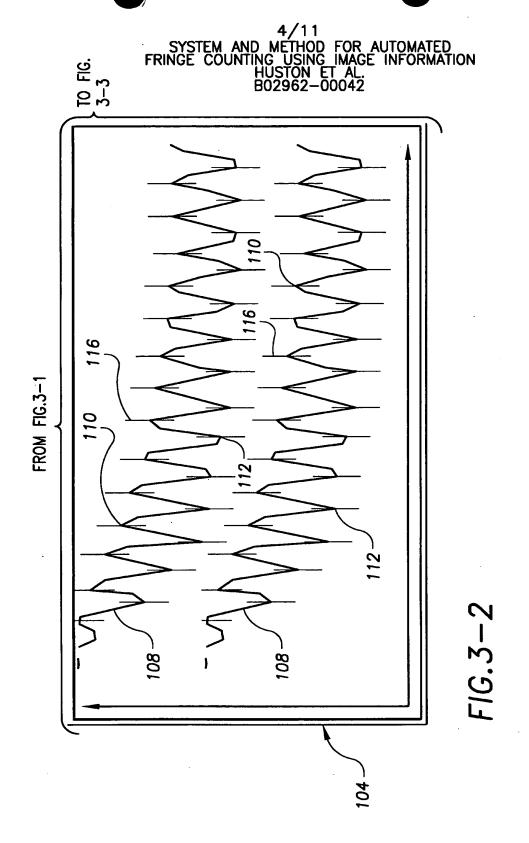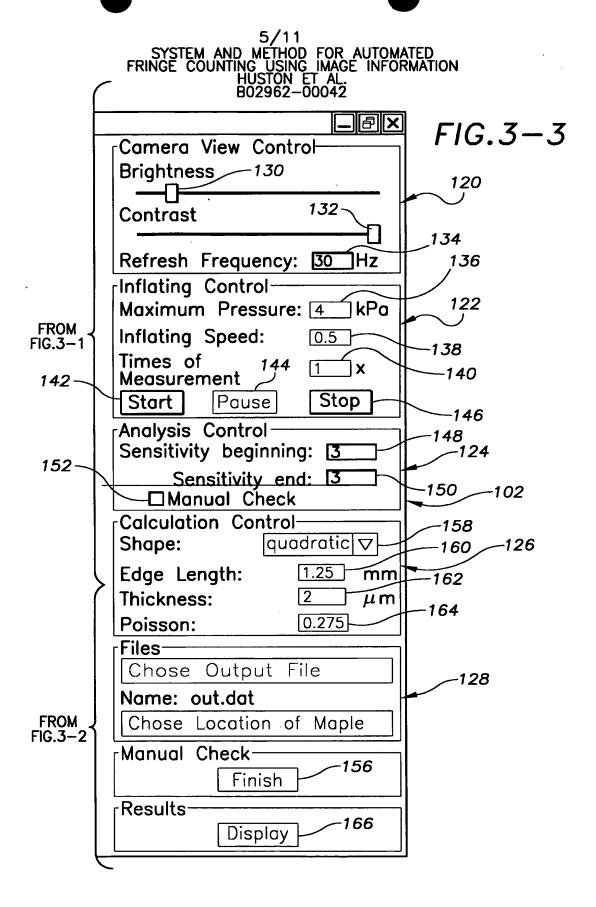FRINGE COUNTING USING IMAGE INFORMATION
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## FIG.5

*200*

*204*

```
SELECT ONE OR
MORE SAMPLING
REGIONS
```

*208*

```
INPUT
PARAMETERS
```

```
RUN TEST
```

*212*

```
MODIFY ANALYSIS
OF CAPTURED
DATA, IF NEEDED
```

*216*

*220*

```
OUTPUT TEST
RESULTS
```

*FIG.6-1*

ADJUST SPECIMEN — *390*

CORRECT PARAMETERS

*374*

YES — SPECIMEN LOCATED PROPERLY ? — NO

YES — PARAMETERS CORRECT ? — NO — *394*

*378*

TO FIG. 6-2

OPTIMIZE IMAGE — *398*

SELECT NEW SAMPLING REGION(S)

*382*

YES — IMAGE OPTIMIZED ? — NO

YES — SAMPLING REGIONS O.K. ? — *386*

*402*

| | |
|---|---|
| FIG.6-1 | FIG.6-2 |
| | FIG.6-3 |
| | FIG.6-4 |

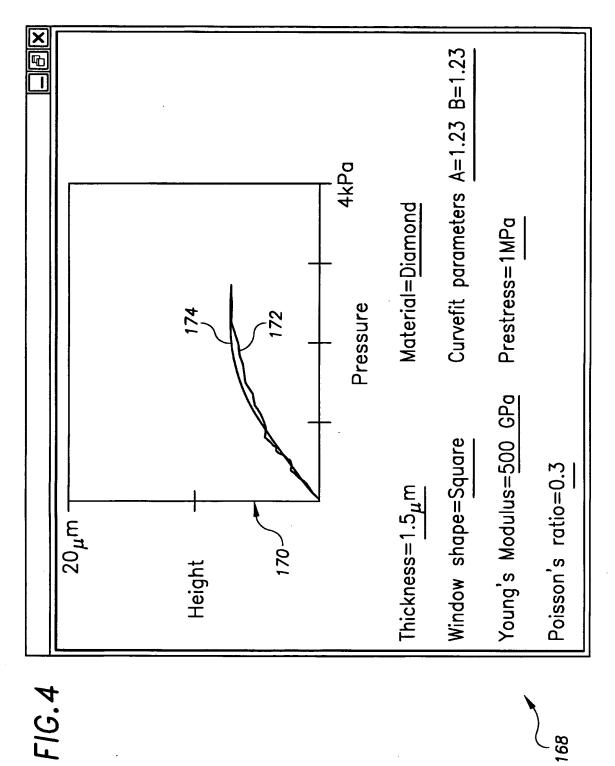STOP DATA CAPTURE AND PRESSURE CONTROL — *370*

NOTIFY USER TESTING STOPPED

*366*

SYSTEM AND METHOD FOR AUTOMATED
FRINGE COUNTING USING IMAGE INFORMATION
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*FIG.6-2*

300  302

**ADJUST SPECIMEN ON MOUNT**
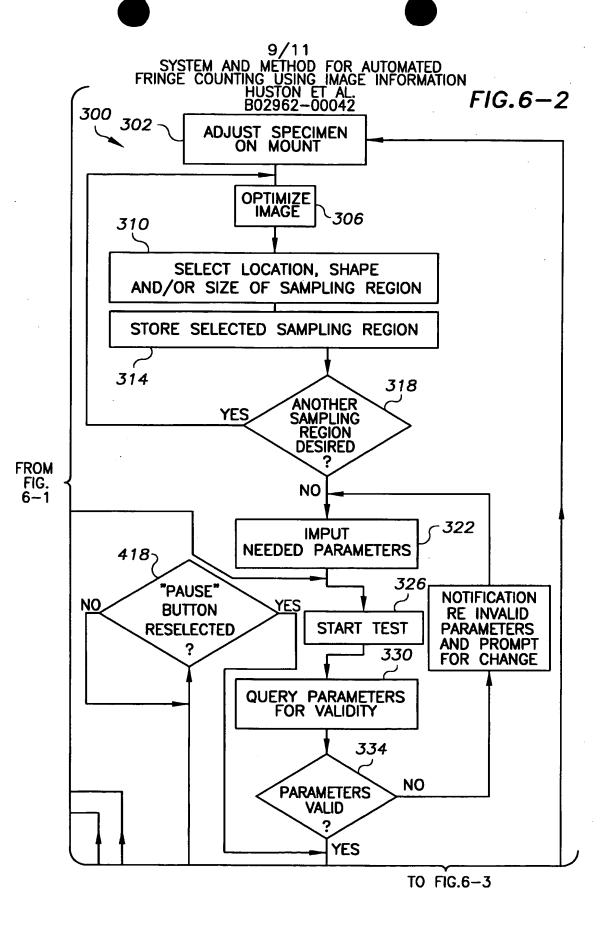
**OPTIMIZE IMAGE** 306

310

**SELECT LOCATION, SHAPE AND/OR SIZE OF SAMPLING REGION**

**STORE SELECTED SAMPLING REGION**

314

YES ← **ANOTHER SAMPLING REGION DESIRED ?** 318

FROM FIG. 6-1

NO

**IMPUT NEEDED PARAMETERS** 322

418 **"PAUSE" BUTTON RESELECTED ?**

NO          YES

326

**START TEST**

330

**NOTIFICATION RE INVALID PARAMETERS AND PROMPT FOR CHANGE**

**QUERY PARAMETERS FOR VALIDITY**

334

**PARAMETERS VALID ?**  NO

YES

TO FIG.6-3

FROM FIG.6-2

*FIG.6-3*

*338*
DETERMINE AVG.
BRIGHTNESS
AT EACH SELECTED
SAMPLING REGION FOR
EACH IMAGE CAPTURED

*414*
STOP DATA
CAPTURE & CONTROL

*410*
NOTIFY USER
IN PAUSE MODE

*346*
PLOT AVG. BRIGHTNESS
ON AVG. BRIGHTNESS
V. TIME OR PRESSURE
CURVE

*342*
CONTROL
PRESSURIZATION
SYSTEM BASED
UPON CONTROL
PARAMETERS

YES

*406*
"PAUSE"
BUTTON
SELECTED
?

NO

NO

*362*
"STOP"
BUTTON
SELECTED
?

YES

*350*
MAX.
OR MIN.
OCCURED
?

YES

DISPLAY
MAX/MIN
INDICATOR

*354*

NO

*358*
MAXIMUM
PRESSURE
REACHED
?

NO

YES

TO FIG.6-4

SYSTEM AND METHOD FOR AUTOMATED
FRINGE COUNTING USING IMAGE INFORMATION
HUSTON ET AL.
B02962-00042          FROM FIG.6-3

422
EACH
BRIGHTNESS
CURVE
ACCEPTABLE
?
— YES

NO

426
"MANUAL
CHECK"
SELECTED
?

NO

YES

430
ALLOW USER TO
MOVE AND/OR ADD
ONE OR MORE
INDICATORS

NO

434
NEW INDICATOR
LOCATIONS
OKAY
?

NO

YES

438
PLOT PRESS. V.
DISPLACEMENT
DIAGRAM

442
FIT CURVE TO
PRESS. V. DISPL.
DIAGRAM

446
CALCULATE MATERIAL
PROPERTIES

450
USER SELECTS
"DISPLAY" BUTTON

454
OPEN NEW WINDOW
AND DISPLAY PRESS.
V. DISPLACEMENT
DIAGRAM AND
MATERIAL PROPERTIES

458
RUN
NEW
TEST
?
— YES

NO

462
EXIT SOFTWARE

FIG.6-4